

Using Computers

IN THE LAW OFFICE

SEVENTH EDITION



MATTHEW S. CORNICK

Note:

- Demo access to Microsoft Office applications (Word; Excel; PPT) is not included with the text.
- Demo access to the Westlaw and LexisNexis research databases (described in Chapter 9, with hands-on exercises) is not included with the text.
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| Software Demos | Expiration Date | System Requirements |
|--|---|--|
| HotDocs (v.11) Accessed via Premium Website | 120 days from installation | Hardware - 900 MHz processor (2 GHz, recommended); 1 GB RAM (2 GB, recommended); 50 MB hard disk storage; 1024 x 768 screen resolution with at least 16-bit color Software - Windows XP (SP1 or higher), Windows Vista, or Windows 7 (32-bit or 64-bit); Microsoft Internet Explorer 6.0 or later; Microsoft Word 2000, XP, 2003, 2007, or 2010; Corel WordPerfect 8, 9, 10, 11, 12, X3, X4, or X5 (WordPerfect® X3 SP2 and above are the only versions of WordPerfect® supported for use on Windows Vista®/Windows® 7.) |
| Tabs3 (v.17) Accessed via Premium Website | No expiration, however the following features are disabled: - Run Data File Integrity Check - Run Reindex Data Files - Run Advance Current Reporting Month - Run Credit Card Authorization | Hardware - 52 MB of free hard disk space; 32-bit color is recommended; recommended 1024 x 768 or higher screen resolution using 100% text size (i.e., 96 dpi); minimum processor speed and system memory requirements are the same as your operating system requirements; high speed wired network recommended; wireless networks are not recommended due to performance and reliability issues. Software - Windows 8/7/Vista/XP; Internet Explorer Version 7, 8, or 6; training videos require Adobe® Flash® Player 10 or later for Internet Explorer. Note: Tabs3 and PracticeMaster software is compatible with 64-bit versions of all supported Windows operating systems. More information about 64-bit compatibility can be found in KB Article HYPERLINK " http://support.tabs3.com/main/R11302.htm " R11302 - Compatibility with 64-bit Operating Systems and Software. |
| AbacusLaw (v.22) Accessed via Premium Website | 120 days from installation | Hardware - Intel P4 or greater Processor (Dual Core processor is preferred); 1GB RAM; 4 GB of Hard disk available (Install footprint is 350MB); remember, these are minimum requirements. If using Vista; Business and Ultimate are the only supported versions. Vista installs should have a minimum of 2GB of RAM. Software - Windows XP Professional, Vista* or Windows 7 (32-bit and 64-bit) Note: If using Vista; Home Premium, Business and Ultimate are the only supported versions. Vista installs should have a minimum of 2GB of RAM. |
| Clio | 365 days from installation | Any operating system |
| Discover FY (v.6.3.9) Accessed via Premium Website | No expiration, however the ability to process data other than the provided content is disabled. | Hardware - Intel® Pentium® 4 Processor 3.0 GHz; 2GB System RAM; 64MB Display Graphics Memory; 1024 x 768 Display Resolution at 16-bit (or better) color palette; Sound Card and Speakers/Headphones (Required for audio functions); 5GB Hard disk space available; 1 Gigabit Network Adapter. Software - Microsoft Windows® XP (Service pack 3), Windows Vista, Windows 7, (32-bit and 64-bit); Microsoft .NET Framework 4.0. |
| CaseMap (v.10) Accessed via Premium Website | 120 days from installation | Hardware - 1 GHz or faster 32-bit(x86) or 64-bit(x64) processor; 1 GB RAM (32-bit) or 2 GB RAM (64-bit); 2 GB or more of available disk space; 1024 x 768 or higher-resolution monitor with 256 colors. Software - Windows 2000, XP, Vista or Windows 7; Microsoft Internet Explorer; Microsoft Windows Scripting 5.6, which is pre-installed on most systems. However, it can be disabled or changed by an administrator or other programs, which may cause these products not to run. |
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| TrialDirector (v.6.5) Accessed via Premium Website | 140 days from installation | Hardware - Intel® Core™ i7 Processor 3.0 GHz (or better); 8GB System RAM; 1GB Display Graphics RAM 1920 x 1028 Display Resolution and 32-bit color palette; 8x DVD Recordable Drive; Sound Card and Speakers/Headphones (Required for audio functions). Software - Microsoft Windows® XP (SP 2 or higher), Windows Vista, Windows 7, (32-bit and 64-bit), Win 8 (32-bit and 64-bit); Microsoft .NET Framework 3.5 (SP1) or later; Windows Media Player 11. |

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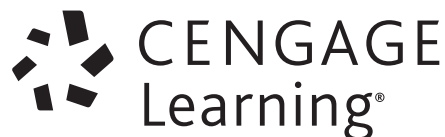
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USING COMPUTERS IN THE **LAW OFFICE**

SEVENTH EDITION



Matthew S. Cornick, J.D.
Clayton State University



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Seventh Edition
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Library of Congress Control Number: 2013958137

ISBN: 978-1-285-18959-8

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Printed in the United States of America

Print Number: 01 Print Year: 2014

For Renda, Peter, and Julia



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P R E F A C E

I should make a confession. There was a time (many years ago) when I believed that I could be successful in the law office without knowing much about computers. That was then. This is now. Let me state this as plainly as I can: a successful legal professional *must* know how to use a computer and the applications commonly used in a law office. With the advent of all things “e”—e-mail, e-discovery, e-filing, and so on—it is essential that you gain the skills this text seeks to impart. The 21st century is well under way and computer literacy is a basic competency in law offices. *Using Computers in the Law Office*, Seventh Edition, is designed to give students both theoretical understanding and practical experience with common law-office computer applications. These include both widely used applications, such as Microsoft Word, Excel, PowerPoint, and HotDocs; and programs specific to the law office, such as Tabs3, AbacusLaw, Clio, Discover FY, CaseMap, TimeMap, Westlaw, LexisNexis, and TrialDirector. I hope that students will learn not only the specific uses of these programs, but also that they should not doubt their abilities or fear the prospect of working with computers.

TO THE STUDENT

If I could give you only one piece of advice, it would be this: *be patient*. Do not rush through the Hands-On Exercises. I can tell you from personal experience that haste is a sure path to mistakes and frustration. If you are a novice to these applications, I hope (and expect) that you will find you can do far more than you ever thought possible.

If I could give you a second piece of advice, it would be to *keep learning*. Technology is always evolving. Never more so than today, knowledge is power. For years, I have been telling my students that the surest way to make themselves invaluable to their employers is to know how to do something the employer does not know. Learn the skills emphasized throughout this text and then keep learning, and your success is almost a certainty.

ORGANIZATION OF THE TEXT

This textbook is organized into ten chapters. The first chapter introduces students to computers with a discussion of the importance of computers to the legal field and a review of computer hardware and software terms. The objective is to give students a rudimentary understanding of basic computer terminology and systems on which the rest of the book can build.

The next nine chapters represent the heart of the book. They cover word processing, spreadsheets, timekeeping and billing, case management/docket control, electronic discovery, the cloud and social media, litigation support, the Internet and electronic mail, computer-assisted research, and the electronic courthouse/automated courtroom and presentation graphics. Each topic is presented in a clear and organized manner and includes many examples of how the relevant software is actually used by paralegals in legal organizations.

Since the publication of the last edition, three new buzzwords have dominated the world of law office technology. These are “cloud computing,” “social media,” and “predictive coding.” The cloud and social media are discussed briefly throughout the text and extensively in a new chapter—Chapter 6 (The Cloud and Social Media). Predictive Coding is discussed in Chapter 7 (Electronic Discovery). The only certainty in this area of the law is change. And to that end, I am pleased that all of the software applications and data files needed to complete the Hands-On Exercises are available online at the Premium Website. Please be sure to check the website before beginning any exercises to check for the latest updates to the exercises and the software applications.

CHANGES TO THE SEVENTH EDITION

Technology in the legal field continues to grow at an astounding rate. In particular, the increasing use of the cloud and social media has, and will continue to have, a dramatic impact on the way legal professionals practice law. Accordingly, this edition features a new chapter on “The Cloud and Social Media.” Some of the changes include

- A new cloud-based software application (Clio).
- Each of these new applications is accompanied by new Hands-On Exercises designed to impart the practical skills required in a modern law office.

- For the first time, all of the software applications can be installed directly from downloadable links via the Premium Website.
- Almost every set of Hands-On Exercises includes a basic, intermediate, and advanced section. The exercises have been revised and updated.
- All of the screen shots have been updated.
- There are over 575 screen shots in this edition; more than ever before.
- Expanded discussion of electronic discovery, metadata, and electronically stored information has been added.
- The latest developments in computer-assisted legal research (WestlawNext, and Lexis Advance) are introduced.

LEARNING FEATURES

Chapter features include the following:

- **Chapter objectives** open each chapter to focus the student's attention on the main elements of the chapter.
- **Internet sites** are referenced, and useful and relevant ones are listed near the end of each chapter.
- **Key terms** are boldfaced in the body of the text, and definitions appear in the margin for easy review and reference. (A comprehensive glossary appears at the end of the book.)
- **Numerous illustrations**, including screen shots, legal documents, tables, and other graphics, are included throughout the text.
- **Test your Knowledge exercises** are included in each chapter.
- **On the Web exercises** are included in each chapter.
- **Questions and Exercises** are included in each chapter to challenge students to apply the information learned in the chapter.
- An **Ethics Question** is included for each chapter.
- **Hands-On Exercises** are included for most chapters to give students actual experience on a computer.

HANDS-ON EXERCISES

Hands-On Exercises are included for 22 different applications; there are 150 exercises in all. These exercises assume that the student has access to a computer and to

application software, but no prior computer experience is necessary to complete the tutorials.

The Hands-On Exercises include step-by-step instructions that guide the student through the application. There are literally hundreds of screen shots to guide the student and act as reference points. All of the Hands-On Exercises are completely interactive, allowing the student to gain hands-on experience with the software. In addition, all of the Hands-On Exercises are specifically related to legal organizations and legal applications, so the student not only learns how to operate the computer and software, but also learns how to use them in the legal environment.

Full tutorials are included for the following applications:

- Microsoft Word 2013 (NEW)
- Microsoft Word 2010
- Microsoft Word 2007
- HotDocs (v.11)
- Microsoft Excel 2013 (NEW)
- Microsoft Excel 2010
- Microsoft Excel 2007
- Tabs3 (v.17)
- AbacusLaw (v.22)
- Clio (NEW)
- Discover FY (v.6.3.9)
- LexisNexis CaseMap (v.10)
- LexisNexis TimeMap (v.5)
- Westlaw
- WestlawNext (NEW)
- Lexis
- Lexis Advance (NEW)
- Microsoft PowerPoint 2013 (NEW)
- Microsoft PowerPoint 2010
- Microsoft PowerPoint 2007
- TrialDirector (v.6.5)

To help students complete some of the Hands-On Exercises, data files are available on the Premium Website.

- Excel
- HotDocs
- PowerPoint
- Word Processing

EDUCATIONAL SOFTWARE

Access to the following demonstration software is included with the text via the Premium Website. Use the Access Code included on the Premium Website card included with your text to activate your free

online access. Please visit <http://www.CengageBrain.com> to create your account, log in, and access the Premium Website.

Please do not download the software programs until your instructor tells you to do so. Please note that many of the programs expire, and will not work after a certain number of days elapse from when the program was first loaded; other limitations may also apply to certain demonstration software:

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- Access to the Westlaw and LexisNexis research databases (described in Chapter 9, with hands-on exercises) is not included with the text.

SUPPLEMENTAL TEACHING AND LEARNING MATERIALS

Premium Website

The Premium Website includes resources for instructors and students. The card in the text includes an access code for this book's Premium Website. Go to login.cengagebrain.com to access the downloadable software demos and updates to the text.

INSTRUCTOR COMPANION SITE

The online Instructor Companion Site provides the following resources:

Instructor's Manual

The Instructor's Manual provides comprehensive teaching support. The Instructor's Manual contains the following:

- Syllabus and lesson plans
- Chapter objectives and outlines
- Teaching suggestions and class discussion ideas
- Sample grading rubrics
- Answers to exercises in the text
- Testbank and answer key

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- *Merriam-Webster Dictionary* and a glossary are only a click away
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ACKNOWLEDGMENTS



This book was made possible by many individuals. This book required an enormous amount of work from a superb team of talented professionals. To all of you, many thanks.

REVIEWERS

Special thanks go to the reviewers of the text for their ideas and suggestions:

Janice Hollman
Portland Community College
Portland, OR

Judith Quinby
Kennesaw State University
Kennesaw, GA

Chuck Splawn
Horry-Georgetown Technical College
Myrtle Beach, SC

Marc Vallen
University of Hartford
West Hartford, CT

Diane Yohe
Bristol Community College
Fall River, MA

Cengage Learning

I am deeply indebted to my editors at Cengage Learning. Shelley Esposito was my Acquisitions Editor. Melissa Riveglia, the Senior Product Manager, had the unenviable task of making sure all the T's were crossed and the I's dotted. This text would not exist without her assistance. So many other folks had the responsibility of double-checking the accuracy of the text and the Hands-On Exercises. This project would not have been possible without their support and encouragement.

My Family

I am so grateful to my family. By necessity, writing is a solitary task and there have been more than a few missed dinners and vacations not taken in the past five years. I love you all very much and appreciate your patience and encouragement. This is for you.

Please note that the Internet resources are of a time-sensitive nature and URL addresses may often change or be deleted.



CHAPTER 1



Overview of Computers in the Law Office

CHAPTER OBJECTIVES

After completing this chapter, you should be able to do the following:

1. Identify how computers are being used in legal organizations.
2. Identify the various computer-system components.
3. Distinguish among the various forms of computer software.
4. Understand the concept of metadata.
5. Recognize the ethical issues raised by the use of computers in the law office.

INTRODUCTION

Computers are an important part of our society. They are used in nearly every facet of our lives, including our jobs, to automate services and products; our health, to enhance medical treatment; our government, to maintain, organize, and analyze information; our education, to help children read and write; our financial institutions, to track and maintain our banking, credit, and investment-related information; our entertainment, including the Internet, movies, music, and the arts; and our transportation, to control the electronic systems in cars and public transportation systems such as subways.

Just as the use of computers in our society has grown, so has the use of computers in the practice of law. The application of computers in large, medium, and small law firms, corporate law departments, and government offices has increased dramatically over the past few decades. It is imperative for paralegals entering the job market to have an understanding of computers, because computers and computer skills (1) allow a paralegal to be more productive and efficient, (2) can give an attorney and paralegal a competitive advantage in court, (3) simplify complicated tasks, and (4) allow the user to stay competitive in the job market.

INTRODUCTION TO COMPUTERS AND THE LAW

Prior to the early 1980s, computers had little effect on the practice of law. A few extremely large firms used them for “back-office” functions such as accounting or billing, but other than that, computers were not used much in legal organizations. A legal professional’s tools of the trade were pen, legal pad, law books, typewriter, and copy machine. After the introduction of personal computers in the mid-1980s, all of that began to change. Now computers are involved in nearly every facet of a

legal professional's job. Virtually all legal professionals use a desktop, laptop, and/or handheld computer with DVD drives, Internet and email access, and a printer. It is now possible—indeed, often required—to stay in contact with colleagues no matter where they are.

A computer revolution has taken place in the legal industry. An industry that started out rejecting technology has now embraced it. Much of the rise in computer use in legal organizations is due to the increased power, decreased cost, and increased ease of use and efficiency of computers, all of which contribute to the competitive advantage that they give the user. Computers are being used for everything from word processing, timekeeping, and billing to legal research on the Internet to website management. This holds true for all types and sizes of law firms, whether a solo practitioner, a thousand-attorney global law firm, or a corporate or government legal department. In prior years, solo practitioners and small law offices lagged far behind larger law offices when it came to technology. This is generally no longer true. Technology is no longer a tool just for the large law firm. The cost of technology has decreased so much that even solo practitioners, small law offices, and legal aid offices can afford state-of-the-art computers.

Computers are used to organize documents, not just in large cases involving tens of thousands of documents, but in smaller cases as well. Computers are used to communicate with clients, often via email, and to exchange documents. Attorneys take depositions of witnesses by using videoconferencing. Laptop computers are used in the courtroom to search for documents, track exhibits, and make presentations to juries. Laptop or handheld computers are used in the courtroom to conduct legal research right at the counsel table. Later in this chapter, we will discuss some more recent and emerging technologies.

The Internet has had a profound impact on the practice of law and on how paralegals perform their jobs. The **Internet** is one of the world's largest computer networks; actually, it is a "network of networks." It connects hundreds of millions of computers around the world and allows them to share information. Legal organizations and paralegals in particular can send and receive electronic messages, research both legal and nonlegal information, send documents, and do much more. The pervasive use of the Internet is clearly driving some of the need for paralegals to have good computer skills.

Computers are also being used by courts in a variety of ways. Many courts allow parties to file documents electronically, using the Internet, and allow attorneys and paralegals online access to the courts' computer systems. Courts use computers to track currently pending cases. Such systems can automatically set scheduling deadlines for each case and alert judges to scheduling concerns or problems, particularly for criminal cases in which defendants have the right to a speedy trial. In some courts, court reporters can store information electronically, within seconds of it being presented, so that it can be displayed immediately for jurors, judges, and parties to view the information.

In short, all types of legal organizations and legal professionals, including paralegals, are using computers on a daily basis in a variety of ways. Given this overwhelming move toward technology use and computerization, all types of legal organizations are looking for legal professionals who not only have good legal skills, but also have the skills to use the organization's computer systems with little additional training.

ELEMENTARY COMPUTER CONCEPTS

This text is not concerned with imparting technical and scientific information on how a computer operates; rather, its focus is on how paralegals can use computers in a practical way to carry out their duties. Nevertheless, it is necessary to cover some

Internet

One of the world's largest computer networks; actually a "network of networks." It allows hundreds of millions of users around the world to share information.

basic computer concepts as background for users. The following sections introduce most of the terms and concepts that a paralegal will encounter on the job.

SYSTEM COMPONENTS

A **computer** is an electronic device that accepts, processes, outputs, and stores information. Information that is entered into a computer is called **input**. Information that comes out of a computer is called **output**. **Hardware** is the actual physical components of a computer system. **Software** refers to instructions that make the computer hardware function. A computer system works together with peripheral devices, such as auxiliary storage and input, output, and communication devices (hardware), to accomplish the information-handling tasks. The system contains a central processing unit and a main memory.

Central Processing Unit

The **central processing unit (CPU)** organizes and processes information. It is the “brain” of the computer. It performs logical operations—in accordance with the operating system software—and coordinates and communicates with auxiliary storage devices and input, output, and communication devices (see Exhibit 1–1).

At the heart of the CPU is the **processor chip** (see Exhibit 1–1). One or more processor chips perform the actual arithmetic computations and logic functions. The speed of the processor, and thus of the computer, is determined by how many bits or bytes of information the chip can process at a time and how fast it acts to process the information. The more bits that can be processed in one cycle, the faster the computer will be. For example, a processor that processes 64 bits at a time is considerably faster than one that processes only 16 bits. How fast a computer works to process information is also characterized in **gigahertz (GHz)**, which refers to the “clock speed” of a computer. The faster the clock speed is, the faster the computer processes information.

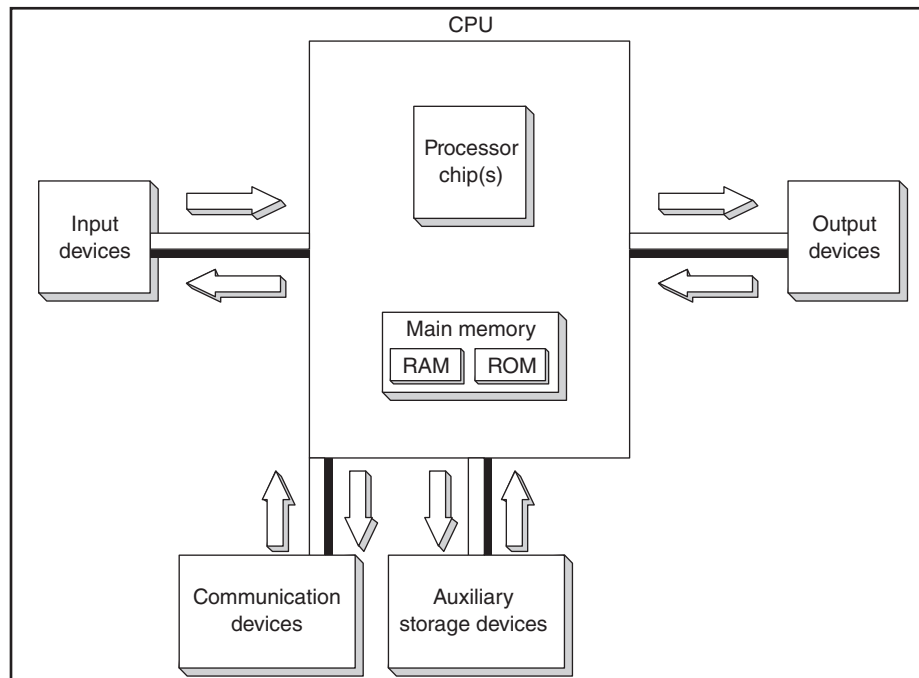


EXHIBIT 1–1
Central processing unit (CPU)

computer

An electronic device that accepts input data, processes data, outputs data, and stores data electronically; types include desktop, laptop, handheld, tablet, and file server.

input

Data or information that is entered or transferred into a computer (including by keyboard, mouse, scanner, voice, etc.).

output

Information or computer results that are produced or transmitted from a computer to a user as a result of the computer’s operations (including to monitor, printer, etc.).

hardware

The physical equipment of a computer system, as opposed to programs or software.

software

Computer programs that instruct the computer hardware how to function and perform tasks.

central processing unit (CPU)

The part of a computer that contains the processor chip and main memory. The CPU organizes and manipulates information, in addition to coordinating with peripheral devices.

processor chip

The part of the computer that performs the actual arithmetic computations and logic functions.

gigahertz (GHz)

Measure of the clock speed of a computer.

main memory

The part of the CPU that stores information that the computer is processing. Main memory consists of read-only memory and random-access memory.

memory chips

Parts of a computer that store or hold information.

read-only memory (ROM)

A part of main memory that contains permanent information a computer uses to operate itself. ROM can be read, but cannot be written to.

random-access memory (RAM)

A part of main memory that is temporary and volatile in nature; it is erased every time the computer's power is turned off. Application programs and data are loaded into RAM when the computer is processing the data.

storage

Retention of electronic information for future use (using storage devices such as hard disks, DVDs, flash drives, and other media).

peripheral devices

Pieces of equipment that are connected to a computer to perform specific functions, such as storing information (auxiliary storage devices), inputting information (input devices), outputting information (output devices), and communicating with other computers (communication devices).

Main Memory

The function of the **main memory** is to hold or store information that the computer is processing. This is accomplished through memory chips. **Memory chips**, like processor chips, are made up of tiny electronic circuits, but instead of processing information, they store or hold information. Main memory comes in one of two types: read-only and random-access.

Read-Only Memory **Read-only memory (ROM)** is permanent, unchanging memory that a computer uses internally to operate itself. It is permanently installed by the manufacturer and cannot be changed or altered; hence the name “read-only.” A computer reads ROM, but you cannot enter information into ROM or change the data in it. The data contained in ROM are not lost when the computer is turned off. Practically speaking, you never even become aware that ROM exists.

Random-Access Memory **Random-access memory (RAM)** is temporary memory that is used when the computer is turned on. Unlike ROM, it is erased when the computer is turned off. RAM is used to temporarily store programs “on the computer screen” when the programs are loaded. For example, when a person is using a word-processing program, that program is in RAM. As words are typed into the word processor, the words are also stored in RAM. To save the information when the computer is turned off, the user must save the information from RAM to an auxiliary storage device such as a hard disk. An auxiliary storage device stores data so it can be retrieved later. One of the most frustrating experiences in computer use occurs when one is working with information in RAM and power is interrupted, such as when the lights flicker from an interruption in power transmission. When power to the computer is lost, even if just for a fraction of a second, the computer turns off and any information in RAM is lost. (This quickly teaches users the value of frequent saves, which transfer information from RAM to more permanent **storage**.)

The number of bytes of information a computer can hold is measured in kilobytes (K), megabytes (MB), gigabytes (GB), terabytes (TB), or petabytes (PB) (see Exhibit 1–2).

PERIPHERAL DEVICES

Peripheral devices are pieces of equipment that are connected to a computer to perform specific functions. They include auxiliary storage devices, input devices, output devices, and communication devices.

| | | | |
|---------------|---|-----------------------|-------------------------|
| Kilobyte (K) | = | One thousand bytes | (1,000) |
| Megabyte (MB) | = | One million bytes | (1,000,000) |
| Gigabyte (GB) | = | One billion bytes | (1,000,000,000) |
| Terabyte (TB) | = | One trillion bytes | (1,000,000,000,000) |
| Petabyte (PB) | = | One quadrillion bytes | (1,000,000,000,000,000) |

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EXHIBIT 1–2
Storage capacities

Auxiliary Storage Devices

An **auxiliary storage device** is used to permanently store information. Auxiliary storage devices and RAM are sometimes confused with one another, because they both use megabytes and gigabytes to refer to their respective **storage capacities**, and they both store information, albeit for different purposes. RAM is where information is stored temporarily, while the user is working with it, and is erased every time the computer is turned off. In contrast, an auxiliary storage device stores information permanently.

Hard Disk For permanent storage, most personal computers contain a rigid magnetic disk or **hard disk drive**. Hard disks are very reliable and have fast **access times**. They can also read and write data. It is possible, however, for them to crash if they are handled roughly (e.g., if the computer is dropped) or if they are defective or old. When a crash occurs, some or all of the information on the hard disk is lost or destroyed. Crashing often causes physical damage to the surface of the disk, making data retrieval difficult even for experts. Sometimes, it seems that hard drives crash for no reason at all. This alone is a good reason to get in the habit of backing up your data on a regular basis.

At least one hard disk drive is usually mounted inside the computer; usually a small light turns on when information is either accessed from or saved to the drive. Most hard disks are permanently sealed and are fixed inside the drive; thus, they cannot be removed. Large-capacity hard disks are standard equipment on most computers produced today. Many people use external hard drives for backup purposes; these auxiliary devices are literally freestanding hard disk drive units.

Removable Drives A large amount of data can be stored using **removable drives**. Removable drives include zip drives and flash drives. Zip drives are about the size of an audio cassette and are relatively slow; they are a somewhat dated technology. Flash drives have largely replaced them. Flash drives, thumb drives (so called because they are about the size of a human thumb), or sticks are extremely small and portable, and are also fairly fast. A flash drive simply plugs into a computer's USB port and is immediately accessible by the computer once it has been loaded. Flash drives are typically used to move large files from one system to another. Many MP3 players also use this technology.

Magnetic Tape In a **magnetic tape system**, data are written to and stored on a spool of magnetic tape. The magnetic tape can be stored either on large tape reels or in tape cartridges.

Magnetic tape systems store data sequentially. (This is similar to an old VHS tape: if you wanted to access a particular section of the tape, you typically had to fast-forward or rewind the tape to the desired section.) For this reason, access times are quite slow. This is why magnetic tape is usually used only for making backup copies of information residing on other storage devices. However, although their access times are slow, they have large capacities, up to a terabyte or more.

Optical Storage Devices Using laser beams, **optical storage devices** can record data on and retrieve data from small plastic disks, such as CDs and DVDs. Optical storage devices can store hundreds of megabytes of data on a single disk. This has allowed manufacturers to store everything from music and video/multimedia presentations to large software programs on a single disk. The space saving made possible by these technologies has been immensely beneficial to law offices, which often must keep large numbers of records for long periods of time. And while the trend may

auxiliary storage device

A device that stores information so that it can be retrieved for later use.

Auxiliary storage devices retain data after power to the computer has been turned off. Auxiliary storage devices include flash drives, hard disk drives, and others.

storage capacity

The maximum amount of data that can be stored on a device.

hard disk drive

A reliable and fast auxiliary storage device that stores data on a rigid magnetic disk; may be built into the computer (internal) or a freestanding peripheral device (external).

access times

The amount of time it takes to transfer data between a storage device and RAM.

removable drives

A small portable device that stores a large amount of data; often used to transfer information between computers.

magnetic tape system

Storage device that records data on magnetic tape.

optical storage devices

Devices that use laser beams to write data onto small plastic disks. Optical storage devices can record hundreds of megabytes of data on a single disk.

now be to store data in the cloud (computer storage accessible through the Internet), many legal professionals still prefer to use these more tangible storage devices.

Input Devices

input devices

Devices used to enter information into a computer; include the mouse, keyboards, scanners, voice recognition devices, digital cameras, and others.

Input devices are used to enter information into a computer. Input devices include the mouse, keyboards, scanners (including bar code and imaging scanners), voice recognition devices, digital cameras, and others.

Computer Keyboard Most computer keyboards are similar to the keyboard of an ordinary typewriter, with a few additions. They are made up of alphanumeric keys, function keys, cursor movement keys, special keys, and a numeric keypad. Keyboards are inexpensive and come in a variety of types and styles.

Scanners A scanner has the ability to bring hard-copy documents into a computer. Many scanners look like small office copiers. Scanners shine light on the document and translate the reflected light into digital signals that a computer can recognize and store. The scanner allows the image of a document, such as a photograph or a microfilm frame, to be put into a computer; this is called imaging.

More specifically, **imaging** refers to the ability to scan a document into a computer so the user can see the exact image of the original document on the computer. Imaging is similar to taking a photograph of a document: you can see the image of the document, but you cannot change it or edit the text. To edit the text of a document, you would need optical character recognition software (see below).

With document imaging, the paper is handled only once, when it is scanned into the computer. Document images can be reviewed, copied, sorted, and filed electronically. Document imaging gives users immediate access to documents, saves storage space, and keeps originals from being lost or damaged. Imaging software allows law offices to track and manage scanned images. Imaging and OCR technologies are used quite frequently in litigation support to track and search for documents in litigation.

Scanners can also translate the text of a document into an electronic format so that the text can then be electronically searched or manipulated with a word processor. This is called **optical character recognition (OCR)**. Using a scanner and OCR software, users can “read” printed material into a computer so the text of the document can be searched (like searching in Westlaw or LexisNexis databases) or brought into a word processor for text editing. In OCR, the scanner reflects light onto the printed text, compares the shapes of the letters in the text to the letters in the scanner/computer memory, and writes the information into the computer. Through the use of OCR technology, it is possible to scan printed information into a computer much faster than a keyboard operator could enter the information. Large OCR scanners can scan thousands of pages of text into a computer in a relatively short time.

However, if the printed text that is being scanned does not exactly match the letters in the scanner’s memory, an error will occur, and the right letter will not be entered. This potential for inaccuracy can be a problem. Even if a document is scanned in with 99 percent accuracy, that can still leave plenty of errors in the scanned version of the document. For example, if a user scans in a 10,000-word document, that would leave 100 errors in the document. The accuracy rating drops dramatically if a document is not clear or has nonstandard type. OCR scanners can be very useful, but accuracy must be checked carefully.

Imaging and OCR are similar yet different. Imaging allows the user to see the document in its original state, but the user cannot search for words using imaging. OCR allows the user to search for words and word patterns, but not to see the exact image of the original document, only the text it contained.

imaging

Scanning a document into a computer so the user can see an exact picture of the document on the computer.

optical character recognition (OCR)

A technology that allows the text of documents to be read or scanned into a computer so the text of the document can be searched or brought into a word processor to be edited.

Some law firms use **bar code scanner** systems to track documents in litigation. This is the same technology used in nearly all retail stores. Once a bar code is applied to a document, the bar code scanner or reader can read the special lines on the bar codes and recognize which document it identifies.

Many multifunction devices are currently on the market that combine OCR scanning, imaging, faxing, copying, and printing. The prices of all of these technologies have decreased significantly in recent years, making these useful devices extremely popular.

Mouse The cursor on a monitor is moved with a **mouse**. This input device is approximately the same size as the palm of your hand. As the mouse is moved, it transmits to the computer a signal that correspondingly moves the cursor in the same direction. For example, if the mouse is moved to the right, the cursor moves to the right, and so on. There are a variety of other devices that perform functions similar to those of a mouse. These include trackballs, trackpoints, and touch pads.

Speech Recognition The ability of a computer to understand spoken words is called **speech recognition**. The user speaks into a microphone that is connected to the computer. Using sophisticated software, the computer is able to interpret the speech and translate it into computer commands and into text for use with word processors, email, and other software. Typically, speech recognition software leads the user through exercises that are designed to teach the software the nuances of that particular person's voice.

Voice input systems have a number of advantages. Most people can speak faster and more naturally than they can write or type, and they need little or no training to use such a system. It also frees the hands to perform other tasks. Speech recognition systems are very popular in offices where they augment or take the place of some secretarial functions such as transcribing dictation. Some users also prefer to use speech recognition instead of typing, as it increases their productivity.

Although speech recognition accuracy is quite good—typically greater than 95 percent—it is still absolutely necessary to proofread the text created by the software. For this reason, among others, many legal organizations do not make much use of speech recognition technology.

Digital Cameras Digital cameras allow the user to take photographs or full-motion video and sound and download or transfer them directly into a computer or upload them to the Internet. The software accompanying these devices also allows the user to easily edit, enhance, and view the information. Many legal organizations are using these devices to cut and paste data directly into presentation graphics programs for displaying evidence to juries. Many legal organizations are rediscovering the old adage that “a picture is worth a thousand words.” Video evidence can be extremely persuasive to juries and factfinders.

Output Devices

Output devices provide a user with the data that a computer has generated or stored. Like input devices, they come in many different types. The type you select depends on the application you are using.

Computer output is displayed on a **monitor**. It is important to recognize that the quality of the picture on the monitor is in part determined by the **video adapter card**, which acts as an interface between the monitor and the computer. The number of colors that a color monitor can display also depends on the video adapter card. Because of the graphical nature of the Internet and the rise in multimedia and video, manufacturers now produce graphics accelerators, video card memory, and other hardware to make graphics appear on the monitor faster.

bar code scanner

Device that reads the special lines of bar codes. Can be used to track documents in litigation, or physical objects such as office furniture and equipment.

mouse

An input device used to move the cursor on the monitor. The cursor moves in the same direction as the mouse is moved.

speech recognition

The ability of a computer to understand spoken words.

output devices

Peripheral device that provides a user with the data a computer has generated, accessed, or manipulated.

monitor

Screen that displays computer output.

video adapter card

Piece of hardware that acts as an interface between the monitor and the computer.

sound card

A device that enhances the sounds that come out of a computer and/or enables speakers attached to a computer to function. Nearly all computers now come with a sound card.

modem

A device that allows computers in different locations to communicate using a telephone line.

cable modem

A data modem that is designed to work over cable TV lines.

DSL (Digital Subscriber Line)

A type of digital phone line that allows both data and voice to be transmitted on the same line, simultaneously if desired. Transmission speed is fairly fast.

wireless modems

Modems that many mobile phones and handheld computers now use to connect to the Internet.

Videoconferencing

A private broadcast between two or more remote locations, with live image transmission, display, and sound. Uses data communications to conduct long-distance, face-to-face meetings.

Voice over Internet Protocol (VoIP)

Functionality that allows users to make telephone calls using a broadband Internet connection instead of a regular phone line.

Much data is still output on paper (sometimes called hard copy) with a printer. Nearly all computers now come with a sound card and speakers. A **sound card** enhances the sounds that come out of the computer and/or enables speakers attached to a computer to function.

A portable projector allows a user to display the image from a computer to an audience. Portable projectors are often used in trials in conjunction with laptop computers or tablets to display presentations and computer-generated evidence to juries.

Communication Devices

A communication device, such as a modem, allows computers to exchange information. Such a device is technically both an input and an output device, as it can receive data from other computers (input) and also send data to other computers (output).

A **modem** allows computers in different locations to communicate using a telephone line. Although a modem acting through a dial-up connection allows users to exchange information with each other over long distances, this type of connection is very slow compared to other types of technology. This is particularly true regarding most World Wide Web sites on the Internet, which are graphically based. Cable, T1, and DSL are alternatives to standard analog phone lines and modems, and are increasingly popular because of the much speedier communication they enable. These and other technologies are making standard modems obsolete. The main advantages that dial-up connections have over cable, T1, and DSL are their much lower cost and almost universal availability. However, these advantages seldom compensate for the extended time required for information transfer via dial-up.

A **cable modem** is a data modem that is designed to work over cable television lines (increasingly, these lines are fiber-optic). The primary advantage of cable modems over dial-up modems is their much faster data-transmission speed, made possible by cable's far greater bandwidth.

DSL (Digital Subscriber Line) is a type of digital phone line that is hundreds of times faster than a dial-up connection. This type of connection also allows data and voice to be transmitted on the same line.

Wireless Modem Many mobile phones and handheld computers now use **wireless modems** to connect to the Internet. A wireless modem typically is either built into the device or slides into an open slot on a laptop or handheld computer; in either case, it allows the user to access email, the Internet, and other mobile devices without hardwired connections.

Videoconferencing **Videoconferencing** is a private broadcast between two or more remote locations, with live image transmission, display, and sound. This technology uses data communications to conduct long-distance, face-to-face meetings. Because of the huge amounts of sound and image data transferred with this technology, it requires audiovisual equipment and special communication lines. Videoconferencing is very useful in a legal organization for meeting with clients, interviewing job candidates, meeting with co-counsel, taking depositions, and other applications.

Voice over Internet Protocol **Voice over Internet Protocol (VoIP)** allows users to make telephone calls using a broadband Internet connection instead of a regular (analog) phone line. Most VoIP service providers allow the user to call anyone who has a telephone number, including local, long-distance, mobile, and international numbers. VoIP allows a user to make a call directly from a computer, a special VoIP phone, or a traditional telephone using an adapter. Cost savings over long-distance telephone charges can be substantial, because most VoIP providers charge a flat fee

for unlimited call time. Some systems can support multiparty conference calls, and can integrate voice mail and faxes with email.

A major disadvantage is VoIP's dependence on electrical power: if the power goes out, so do the phones, unless there is a backup system. VoIP is also dependent on proper operation of both the broadband connection and the network; if they go down, so do the phones.

Communication Devices in Legal Organizations Most legal organizations have long since moved from slower, dial-up modems to faster communication technologies such as cable, DSL, and T1. This is primarily due to the overwhelming use of the Internet in law offices and the need for fast connections to email.

Tablets and Smartphones Look around your classroom. Chances are that many students are not using laptop computers; instead they are using tablet computers (or just “tablets”). A tablet is a light, slim, portable computer that uses a touchscreen as its primary input device, such as the Apple iPad. When your class takes a break, how many students reach for a smartphone, such as the Apple iPhone? These small mobile devices are simple to use, yet they can have extraordinary computing capability. Internet access is available via the device's cellular capability and Wi-Fi.

LOCAL AND WIDE AREA NETWORKS

Networks connect a multitude of computers and allow them to work together. Law offices may use local area and/or wide area networks.

Virtual Private Networks (VPN)

You have probably logged onto numerous private networks without even thinking about it. For example, when you are online in your classroom, you are probably connected to your school's network. These private networks used by universities and corporations usually take advantage of sophisticated security systems to protect the data sent on the network. On the other hand, when you use the Internet provided by a hotel or a coffee shop, that is a public network and does not offer the same level of security as a private network. That creates the potential for all kinds of trouble as confidential client information is essentially streaming through the air available to anyone with the means and desire to intercept it.

A Virtual Private Network, or VPN, is a technology that lets people access their office's computer network over the Internet while at home or traveling. One way to think of a VPN is to think of it as a tunnel. Inside this “tunnel” information may travel safely. While in this “tunnel,” information is encrypted. The end result is that the tunnel protects the information and even if it is intercepted, since it is encrypted, it is not of any use to the hacker. Accessing a network via a VPN is sometimes referred to as remote access.

So why would you want to use VPN for remote access? Let's say you want to be able to work from home. Or maybe you need to retrieve a file while traveling. Without a VPN, in order to make resources on the office network available to users, the network administrator would have to weaken the security of your network by opening holes in your firewall—which isn't usually a good idea.

With VPN, the integrity of your office network remains intact, but you can allow remote users to act as part of the office network. After connecting over VPN, remote users can access files, print documents, and generally do anything with their computers that they would be able to do in the office.